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SECURITY INFORMATION

PROVISIONAL INTELLIGENCE REPORT

PETROLEUM IN THE SOVIET BLOC

REFINING OF PETROLEUM IN THE USSR

CIA/RR PR-17 (L-O)

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**CONFIDENTIAL**~~SECRET~~ANNEXCONTENTS

	<u>Page</u>
Derivation and Sources of Data .....	1
1. General Review of Information Sources and Estimates .....	1
2. General Review of Data on Foreign Refinery Constructions in the USSR .....	4
a. Vickers Company (English) .....	4
b. Graver Corporation .....	4
c. Winkler-Koch Engineering Company .....	5
d. E. B. Badger and Sons Co., et al. ....	6
e. Universal Oil Products Company (UOP) .....	7
f. Foster Wheeler Corporation .....	8
g. Max B. Miller and Company, Incorporated .....	8
h. Alco Products Division, American Locomotive Company .....	9
i. Lummus Company .....	9
j. German Companies .....	10
3. Basis of Refining Estimates Illustrated with Data Analysis for the Soviet Far East .....	10
4. Reported Sites of Soviet Petroleum Refining Facilities .....	16
a. Emphasized in Reports as Sites of Major Facilities .....	16
b. Less Emphasized in Reports as Sites of Major Facilities .....	16
c. Inferred in Reports to Be Sites of Minor Facilities .....	17
d. Sometimes Inferred in Reports to Be Sites of Major Facilities ..	18
e. Sometimes Inferred in Reports to Be Sites of Minor Facilities ..	18
f. Sometimes Inferred in Reports to Be Sites of Some Facilities ..	18
g. Mentioned in Reports as Sites of Possible Facilities .....	19

~~SECRET~~**CONFIDENTIAL**

S-E-C-R-E-T

	<u>Page</u>
5. Annotated List of Selected References . . . . .	22
a. General Data on Soviet Petroleum Industry and Production . . . . .	22
b. Special Monographs on Soviet Petroleum Industry Topics . . . . .	23
c. Miscellaneous Data on Soviet Regional Oil Industry . . . . .	24
d. Fragmentary Intelligence on Soviet Oilfields: Selected Typical Reports . . . . .	25
e. Miscellaneous Notes on Soviet Petroleum Industry . . . . .	25
f. [Redacted] Reports . . . . .	25
g. Data on the Fourth Five-Year Plan for the Soviet Petroleum Industry . . . . .	26
h. Data on Soviet Petroleum Industry Technology . . . . .	26
i. Typical Intelligence on Soviet Petroleum Industry Equipment, Procurement and Manufacture . . . . .	26
j. Data on Soviet Lend-Lease Refineries with Houdry Systems . . . . .	26
k. Other Data on Foreign Refinery Constructions in the USSR . . . . .	31
l. Miscellaneous Reports on Specified Refining Facilities. . . . .	34
m. Special Data on Refining Technology and Related Petroleum Chemistry . . . . .	42
n. Data on Quality of Soviet Crude Oils . . . . .	46

S-E-C-R-E-T

SECURITY INFORMATION

ANNEX

DERIVATION AND SOURCES OF DATA

1. General Review of Information Sources and Estimates.

Capacity and engineering data for the Soviet refineries are recorded in some detail before 1940 in the published Russian technical literature. In correlation with similar data otherwise available for the considerable portion of the facilities installed by companies of Western countries, chiefly the US, the Russian technical books and trade journals contain reasonably complete coverage of the pre-war status of Soviet refining.

Firm details for the later Soviet refining facilities conform to the rule generally prevailing for all later strategic data on the USSR. The later information is essentially confined to classified intelligence, and even the basic details are typically incomplete and much scattered. Gaps in the later Soviet refining record are not only conspicuous with respect to the installations made by the Soviets independently, but are likewise significant in some cases with reference to the constructions handled by companies of the West. Many reports are available, however, for the more important constructions of the latter type. The intelligence is voluminous, for instance, for the Soviet lend-lease refinery projects where Houdry catalytic systems were included. Source data are reviewed in Part 2 of this appendix, covering foreign refinery constructions in the USSR. Information on these constructions is in most cases more complete than it is for the other later Soviet refinery installations and for the general Soviet refinery potentials, plans, operations, and technology.

S-E C-R-E-T

~~S-E-C-R-E-T~~

For the present estimate of refining installations existing in the USSR in 1950, the basis was in a correlation of the more consistent and apparently more authentic data in a large number of available intelligence reports. A list of selected references is attached as Part 5 of this Annex, designating some of the reports considered to be variously more typical, more general, or more important.

With respect to Soviet refining installations in general, the estimate of the total results by integration of fragmentary data containing various degrees of confusion, contradiction, and ambiguity. The general method of data correlation to develop an estimate is illustrated in Part 3 of this Annex with the Soviet Far East sector alone selected as an example. Intelligence information is, however, actually more consistent for this sector than it is for most of the USSR areas.

Numerous intelligence reports in addition to those here listed contain data on Soviet refineries, often in fragmentary form. Among these there are many reports apparently contributing information for the compilation of refinery target lists, but too general and too meager in detail for value in a technological analysis.

In Part 4 of this Annex, a list is compiled showing 174 reported sites of Soviet refineries as disclosed in a preliminary survey of the available intelligence. These reported sites are classified in the list according to what seems to be implied in regard to refineries actually existing at the places. When the existences of true refineries are considered to be less probable, in the present study, the pertinent reports are meager in detail and the reported facilities could very well consist of oil storage dumps or terminals,

~~S-E-C-R-E-T~~

S-E-C-R-E-T

coal carbonization plants, synthetic oil hydrogenation plants, vegetable oil plants, oil blending plants, small oil chemical plants, pumping stations, and the like.

Certain US trade journal publications also provide some data for comparison with the refinery capacity estimates as outlined in the present study, although the periodical literature data show major inconsistencies and often have authenticity open to question. Of some importance in this respect there are the "World Oil Almanacs" published by World Oil, formerly the Oil Weekly, and the Oil and Gas Journal article by D. M. SHIMKIN, Is Petroleum a Soviet Weakness? as published in the 21 December 1950 issue. It is noted that the SHIMKIN article estimates the 1950 annual "national cracking cap city" at 17.5 - 18.0 million metric tons in the USSR. Independently derived as an intelligence estimate for the present analysis, the corresponding figure is about 18.2 million metric tons for the 1950 USSR annual conversion cap cities of all types, mostly of the cracking type.

As outlined in more detail under 6 of Paper C\*, it is probable that the listed non-catalytic capacities in Table 4, Appendix A, include obsolete, dismantled, or otherwise inoperable equipment in some cases; this appears to be especially true in certain instances of crude distillation apparatus. But even if each listing in the estimate is assumed to be valid, it is probable that no account is taken of a number of installations, mostly minor and unreported but actually existing in 1950. Various unconfirmed and doubtful reports on major refining installations are here discounted, and one of these relates to about 25,000 metric tons per year of thermal cracking capacity supposed to be at Krasnodar. It is also probable that minor thermal reforming capacity is actually represented in some of the conversion totals inferred to be for thermal cracking, and that other existing minor thermal

\* Paper C is the foregoing report, C. Refining of Petroleum in the USSR.

S-E-C-R-E-T

~~S-E-C-R-E-T~~

reforming capacity is not represented at all.

Further as discussed under 6 of Paper C, it is noted that with respect to service for crude produced in the Second Baku and Pechora Regions, northern European Russia is indicated to have crude distillation capacity noticeably deficient while the thermal conversion capacity is noticeably large. These unbalanced relations prevail in reverse for the Caucasus and other areas in southern European Russia. Non-catalytic capacity of all types appears to be in excess in the Erba, Turkmen, and other areas of Soviet Central Asia.

2. General Review of Data on Foreign Refinery Constructions in the USSR.

a. Vickers Company (English)

Vickers installations in the USSR consisted of six Vickers thermal cracking units constructed in 1923 (see Paper C, 5, 6, and Appendix A, 1 and Table 1). These six were installed as double units. Of the three pairs of units two were at Baku while the other was at Grozny. See references in Part 5 of this Annex:

b (1), k (1).

b. Graver Corporation

The former Graver Corporation held the franchise to install Jenkins thermal cracking units, and this organization handled the construction of all six of the Jenkins units erected in the USSR. See Paper C, 4, 5, 6, and Appendix A, 2 and Table 1. Jenkins cracking systems are little more than visbreakers, and the Soviet Jenkins facilities consisted of a double unit at Grozny together with two double units at Batum, all installed in the period 1928 - 1931. See references in Part 5 of this

~~S-E-C-R-E-T~~

S E C R E T

Annex: a (4), b (1), k (1), k (3). The Graver Corporation also constructed two crude distillation units at Baku during this period. See reference k (3). \*

c. Winkler-Koch Engineering Company

The Winkler-Koch Company had direct charge of the construction of the first 15 Winkler-Koch thermal cracking units installed in the USSR. These 15 units were erected in 1930 - 1931. See references a (4), b (1), k (1), k (6). Locations of the 15 units are given in references

b (1) (e) and k (1), and also in Appendix

A, 3 and Table 1. The Soviets then received the plans for fabricating equipment and installing Winkler-Koch units independently, and under these conditions there were later constructed at least 25 more of the units with this basic design. See reference b (1) (e) and for locations see Appendix A, Table 1. Of the total of 40 Soviet Winkler-Koch units thus reported, the first 23 were originally of the single furnace type while the other 17 were installed as double furnace systems. Most of the first 23 units are indicated to have been subsequently reconstructed and also converted to the improved or double furnace operation. Modifications of the Winkler-Koch system are further reported to have resulted in basic designs for many later thermal cracking and some thermal reforming plants in the USSR. In number of constructions, however, the later Soviet thermal cracking units have been designated to involve major items of equipment respectively engineered by Badger, Foster Wheeler, Kellogg, Lummus, and Alco. See references a (4), j, k (1), k (6), k (7), and also see Paper C, 4, 5, 6, and Appendix A, 3, 4, 5 and Tables 1, 2.

\* The presently designated references are in Part 5 of this Annex.

S E C R E T

d. E. B. Badger and Sons Company, et al.

In the period 1929-1931 Badger constructed Soviet refining facilities as follows: at Grozny, one crude distillation unit with 1,250,000 metric tons per year capacity; and at Baku, three crude distillation units with 500,000 metric tons per year (Te/Yr) capacity each, one vacuum unit for lube oil with 250,000 Te/Yr capacity, and two extra tubestill heaters equivalent to those in the 500,000 Te/Yr capacity crude distillation units. See references a (4), k (1), k (2).

In the period 1942-1946 Badger handled the design and construction of the extremely

important Soviet lend-lease refinery projects which together included Houdry catalytic

systems and likewise various correlating facilities. The correlating facilities were for crude distillation, the mal

cracking, thermal reforming, Duo Sol solvent extraction to yield lubricating oil of aviation grade, sulfuric acid catalytic alkylation, phosphoric acid catalytic polymerization, acid treating of gasoline with rerunning, and the like. See references a (4), b (1) (e), j, and k (1).

For these lend-lease projects the actual extents of construction and

equipment delivery are described in Appendix A, 5. Also see Appendix A,

Tables 2, 3. Soviet lend-lease projects under Badger were further extended

to include two Petreco desalting and dehydrating units, respectively designed for

Syzran and Sterlitamak. See reference k (1). Via collateral contracts for the

lend-lease projects, equipment was furnished to Badger by other American companies

as follows: Foster Wheeler Corporation, Universal Oil Products Company (UOP), Max

B. Miller and Company, Houdry Process Corporation, Petroleum Rectifying Corporation,

S-E-C-R-E-T

Stratford Engineering Company, Texas Company, Fluor Corporation, and Julian Company. See reference k (1). The F. W. Kellogg Company is in addition reported to have constructed two thermal cracking plants under lend-lease in the USSR. See reference a (4) and Paper C,4. The earliest Soviet negotiations for thermal cracking plants prior to any actual USSR installation of that type are reported to have been with Kellogg for Cross units, with UOP apparently for Dubbs units, and with Dubbs representatives directly. See reference b (1) and Paper C,4.

e. Universal Oil Products Company (UOP).

In the interval between being contacted by the Soviets for petroleum conversion facilities prior to 1928 without a contract made, and a later status under collateral contract for Soviet lend-lease equipment to be installed by Badger, UOP had charge of the construction of four significant and modern conversion projects for the Soviets, 1939-1940. The latter facilities consisted of three phosphoric acid catalytic polymerization units with a capacity of about 30,000 Tg/Yr each, respectively located at Grozny, Saratov, and Ufa, and of a nickel catalyst hydrogenation unit located at Ufa and operated so as to yield about 80,000 Tg/Yr of technical isooctane, using the combined polymer gasolines as charge. See references a (4), b (1), k (1), k (5), and k (7). These UOP Soviet installations are further described in Appendix A, 6. Also see Paper C,3,4,5,6.

The Lummus Company is inferred to have been the sub-contracting firm in charge of the UOP construction at Ufa. See reference k (5). Certain reports are much confused in regard to the UOP Soviet polymerization and hydrogenation units. See references b (1) and k (7).

S E C R E T

f. Foster Wheeler Corporation

Foster Wheeler is indicated to have installed crude distillation tube-stills prior to 1928 in the USSR, and to have furnished tubestill heaters for at least some of the Soviet Wi Kler-Koch cracking units. Prior to later status under collateral contract for Soviet lend-lease equipment to be installed by Badger, Foster Wheeler is definitely reported to have installed six combination crude distillation and vacuum units in the USSR, with these six combination units constituted by two at Grozny, 1930-1931, and four at Batum, 1930-1936. See references a (4), k (1), and k (6).

g. Max B. Miller and Company, Incorporated

The Max B. Miller organization is reported to have installed at least three Duo-Col solvent extraction plants for lubricating oil manufacture in the USSR. One plant was furnished under collateral contract to Badger for the Soviet lend-lease project including a Houdry catalytic system at Orsk. See references j and k (1) and Appendix A, 5. The Miller plant at Orsk was designed to produce about 30,000 Te/Yr of aviation lubricating oil from a charge of about 90,000 Te/Yr of imported reduced crude, with this charge probably obtained from the salt dome reservoirs of the Emba oil region, where the crude oil yield is reported to have a large content of excellent quality lubricating oil bright stock. The other two Miller plants were installed in 1933 - 1934 at Baku and Grozny, respectively. See references a (4), k (1), k (6), and Paper C, 2. The Baku and Grozny Miller plants may be assumed to take reduced crude charge similarly as in the corresponding Orsk plant.

S-E-C-R-E-T

## S E C R E T

The Baku Miller plant is reported to have a "capacity" (presumably charge capacity) of about 625,000 Te/Yr. See reference k(6). This rating is so large that the accuracy is questionable.

b. Alco Products Division, American Locomotive Company.

Alco is reported to have installed the following refinery facilities in the USSR: two crude distillation units at Grozny in 1931 - 1932, one vacuum unit for lubricating oil at Baku in 1933 - 1934, and one thermal cracking unit at Ufa in 1935 - 1936 but probably not completed until 1939. See references a (4), b (1), k (1), k (6) and k (7). The Alco Ufa cracking unit has been reported to have a "capacity" (presumably charge capacity) varying from about 135,000 to 550,000 Te/Yr, with the charge variously inferred to be "crude" or "crude residue".

See references b (1) and k (7). The lower capacity and a charge of crude residue are believed to be more realistic assumptions applicable to this Alco cracking unit, in view of the reported prevailing Soviet practices. The Alco cracking unit is reported to have been duplicated by the Soviets at Ishimbayev. See reference k (7). Other intelligence does not confirm the existence of cracking facilities at the latter place although duplication of the unit may have occurred at Sterlitamak. See Paper C, 4, and Appendix A, Table 2.

i. Lummus Company.

Lummus is inferred to have been the subcontractor for U.P installations at Ufa. See reference k (5). Lummus in addition constructed in the period 1936 - 1939 at Ufa a combination thermal refining unit. The latter is variously described as a "complete" refinery with about 1,100,000 Te/Yr of crude charge capacity, by reference a (4); as a combination crude distillation and cracking unit,

~~S-E-C-R-E-T~~

by reference k (1); and as a combination thermal cracking and reforming unit having a "capacity" of about 1,100,000 Te/Yr and a capability of producing high octane gasoline (aviation grade?) in the reforming stage, by reference k (7).

Intelligence data have inferred major Soviet alterations in the Lummus combination facilities at Ufa, however, and the present status of the extensive installation cannot be evaluated.

### 3. German Companies

Precisory data, such as reference k (1) are available as follows for seven crude distillation units and one vacuum unit for lubricating oil, constructed by three German firms in the USSR. Of the crude distillation units, the Wilius firm constructed one at Baku (1928); the Pintsch firm constructed two at Baku (1928) and one at Grozny (1928 - 1937); the Borrmann firm constructed one at Grozny (1928 - 1937) and two at Tuapse (1928). The Borrmann firm installed the vacuum unit at Varinsk in 1929. (Firm data are lacking for existing facilities at Varinsk.)

### 3. Basis of Refining Estimates Illustrated with Data Analysis for the Soviet

#### Far East

As a typical example of contradictions and obscurity present in the available intelligence on Soviet refineries, a selection of representative data on installations as comparatively recent as the Komsomolsk facilities is summarized below. Much of the data in this case originated in captured documents exploited by the Special Document Section of the US Army.

According to SDS 2082, the Komsomolsk facilities consisted of cracking installations under construction (date of source, 1940), with a planned production

~~S-E-C-R-E-T~~

## S E C R E T

capacity of 500,000 metric tons per year (Te/Yr) (date of source, 1942; cf. also SDS 552). According to SDS 2217 (date of source, March 1942), these facilities were in the planning stage with the location to be near the Amur River at a place formerly called Permskoye; the "Department I capacity" was to be 500,000 Te/Yr of crude oil, producing mineral oils and oil products. With date of information in 1943 and 1944 (SD 2001, 2002), the Komsomolsk facilities were further noted to be under construction with a planned production capacity of 500,000 Te/Yr.

With date of source in October 1942 (SDC 2472/2), however, the Komsomolsk refining construction was reportedly completed with a rated "capacity" of 1,000,000 Te/Yr. In SDS 2578 (date of source, 20 October 1942), more specific details were given as follows for these installations. There were two cracking plants, with a third to be constructed as of November 1941. The "capacity" was given as 800,000 Te/Yr of crude oil, with 500,000 Te/Yr planned for 1941 operation. The refinery construction was asserted to be one of the best in the USSR and the only one in the Soviet Far East. The facilities were to serve to decrease the load of petroleum products imported from the western USSR via the Trans-Siberian railroad, and from this refinery the products were listed as aircraft gasoline (specific gravity 0.76), kerosene, ligroin, and tar substances. There were 34 storage tanks of 500 metric tons (Te) capacity each already constructed, with 10 tanks also of 500 Te capacity each under construction. An oil pipeline to Komsomolsk was under construction from Sakhalin, via a 400 kilometer route crossing the Tatar Straits.

Most of the SDS 2578 data have been repeated in source documents of other series (cf. CIA 641667, Item 1 (65) in Part 5).\* These data also appear in SDS 2007.  
\* The presently designated reference items are in Part 5 of this Annex.

S E C R E T

date of source, March 1943, except that the production capacity is given as 700,000 Te/Yr with motor gasoline mentioned in place of kerosene in the list of products, and that more details are given for the oil pipeline supposed to extend to Komsomolsk from Olha on Sakhalin. According to SDC 2007, the pipeline reportedly had a route crossing the Tatarski Strait at the narrowest point near Pogobi Cape, reaching the Arur River near Sofiskoye, west of De-Kastri; the pipeline construction was supposed to have been made at the beginning of 1942. Neither the existence or construction of such a pipeline is actually confirmed, however, in the responsible intelligence generally available.

In SDC 2252 with date of information as of late 1944, the Komsomolsk refinery was reported to have three cracking installations. The production capacity was further given as 1,000,000 Te/Yr of gasoline, "petroleum" (?), ligroine, lubricating oil, and tar products. The construction of the facilities was given as from May 1940 to October 1942, in a location 14 kilometers northeast of the city of Komsomolsk.

In contrast to the above information, only a very small refining installation ("Oil Refinery # 1") is described at Komsomolsk in Janis 73, Chapter IV (February 1945, LIG 118036). In this report the projected annual "capacity" of the refinery was stated as a trivial quantity of 26,000 Te, with use of a "modified Badger process" noted and the refinery "byproducts" listed as Diesel oil, kerosene, and tar. The facilities were further stated to have been started up in 1943, producing 1,600 Te of 72 ON gasoline annually with the latter stock raised to 95 ON by use of blending agents. Mention was made of a reported plan to improve the refining equipment so as to produce 100 ON gasoline.

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The Komsomolsk oil refinery has been otherwise reported as the larger of two Soviet Far East installations charging Sakhalin crude with this crude oil stocked during the summer navigation season to compensate for winter freeze (AIC report on Siberian phase of V.P. Wallace's flight to Siberia and China, K-70415).

In FIC/AMIS. Geo. Intell. Rpt (Int) No. 11, 18 December 1948, the coordinates of the Komsomolsk facilities were given as  $50^{\circ}33'$  North  $136^{\circ}58'$  East; the facilities were described as "refineries" of "large capacity" located near the city of Komsomolsk, with the products shipped to Khabarovsk by pipeline and rail. In the Pacific Command Weekly Intelligence Digest 14 - 48, 2 April 1948, it is reported that Sakhalin crude oil is shipped to refineries at Komsomolsk and Khabarovsk, and that the refinery areas have sufficient storage capacity to carry charge stocks for winter operation while shipments from Sakhalin are stopped because of ice. The later available intelligence provides few new data on the Soviet Far East refineries; a typical example of such reports is DAL/TB-373 No. 3007, 18 December 1948, based upon information furnished by [redacted]

25X1

with references designated as items in Part 5 of this Annex. Intelligence reports have identified Soviet Far East petroleum refineries at Komsomolsk and elsewhere as follows:

25X1X7

[redacted] Major oil refineries are noted at Komsomolsk and Khabarovsk (pp. 40, 47), with cracking plants reported in each of the two refineries (p. 47). The annual crude oil capacities are given for the two refineries as 526,000 Te and 200,000 Te respectively, charging Sakhalin crude (p. 47). Sakhalin crude is reported to be shipped to the mainland from Moskalvo on Sakhalin (p. 47).

S-E-C-R-E-T

It is further stated that a Sakhalin oil pipeline connects Noksalvo with Okha, that small refining facilities exist at Noksalvo, and that refining capacity for 26,000 Te/Yr of crude oil exists at Nikolaevsk on the mainland (p. 47).

Notes on the Chabarovsky refinery appear in FEC 10406, Item 1(59), and FEC 10874. Item 1(60), and in CIA 303923, Item 1(58), this refinery is more completely identified, with location sketch given and an annual charge capacity of 500,000 Te.

25X1A2G

estimated. In [redacted], a Chabarovsky refinery with operation on shale oil is described, charging 4,500 B/T of shale oil and yielding 3,500 B/T of refined products. In FEC 10975, Item 1(61), there is mention of a plant producing asphalt at Chabarovsky.

In FEC 10614, Item 1(62), there is a report of a refinery at Izvestkoveya in the Jewish Autonomous Oblast, located to the west of Vladivostok. In CIA 232501, Item 1(63), a refinery is reported at Lekhodka to the east of Vladivostok. CIA 56323, Item 1(64), provides a report of a refinery at Okha on Sakhalin.

Various other reports further provide fragments of information on refineries supposed to be at the above mentioned places and at certain other sites in the Soviet Far East. The existence of refineries at these other sites is considered to be improbable, and this improbability is especially applicable in the case of the important seaport of Vladivostok although there is firm evidence of large capacity for oil storage at this port.

Overall data correlations are the basis of a present estimate of 1,260,000 Te/Yr of crude charge capacity in the Soviet Far East, referred to the date 1 January 1951. The exact sites and respective capacities of the separate crude distillation

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plants in this area are considered to be uncertain. As shown in Table 4 of Appendix  
thousands of  
A, the results of prorating give this breakdown in Te/Yr upon the basis of the best  
available evidence: 605 at Komsomolsk; 545 at Khabarovsk; 90 at Okha; 20 at  
Moskelye, and 20 at Izvestkovaya. The existence of crude distillation apparatus is  
discounted at Nakhodka, Vladivostok, Nikolaevsk, and other Soviet Far East sites.

25X1A2G

25X1X7

I [redacted] b(1) (e), various SDS translations, [redacted]

Item 1(56); and various other intelligence reports, thermal cracking installations  
have been noted at Komsomolsk, Khabarovsk, and Nikolaevsk. These cracking facilities  
have been described as of a Soviet design at Komsomolsk, derived from Badger  
systems and present in as many as three units; as of a Winkler Koch unit at Khabarovsk;  
and at Nikolaevsk as of a design similar to that at Komsomolsk. The best available  
evidence has resulted in an estimate of 474,000 Te/Yr for thermal cracking charge  
capacity in the Soviet Far East, referred to the date of 1 January 1951. The estimated  
total appears to be in three units of equal charge capacity, respectively  
located at Komsomolsk, Khabarovsk, and Nikolaevsk. This discounts the reported  
existence of more than one separate cracking unit in the true sense at Komsomolsk.

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4. Reported Sites of Soviet Petroleum Refining Facilities.

a. Emphasized in Reports as Sites of Major Facilities.

- (1) Baku
- (2) Batum
- (3) Chusovskiy Gorodki
- (4) Irogobych
- (5) Fergana
- (6) Gorki
- (7) Grozny
- (8) Curev
- (9) Khabarovsk
- (10) Komsomolsk
- (11) Krasnodar
- (12) Krasnovodsk
- (13) Kuibyshev
- (14) Molotov
- (15) Moscow
- (16) Orsk
- (17) Saratov
- (18) Sterlitamak
- (19) Syzran
- (20) Tuapse
- (21) Ufa
- (22) Yaroslavl

b. Less Emphasized in Reports as Sites of Major Facilities.

- (1) Batraki
- (2) Chelsken
- (3) Chkelov
- (4) Ishimbaevo
- (5) Kazan
- (6) Therson

\* Cf. Section 1 (p. 2) of this Annex.

S-E-C-R-E-T

- (7) Kim
- (8) Krasnokamsk
- (9) Leningrad
- (10) Nebit-Dag
- (11) Nikolaevsk
- (12) Odessa
- (13) Osipenko (Berdiansk)
- (14) Stalinabad
- (15) Stalingrad
- (16) Tuimaza
- (17) Ukhta

c. Inferred in Reports to Be Sites of Minor Facilities.

- (1) Andizhan
- (2) Borislav
- (3) Burguruslan
- (4) Chelyabinsk
- (5) Chirmon
- (6) Dzerzhinsk
- (7) Iskine
- (8) Izvestkovaya
- (9) Karibaden
- (10) Lwow
- (11) Makhachkala
- (12) Nelnikova
- (13) Mirzaani
- (14) Moskalvo
- (15) Mukachevo (Munkacs)
- (16) Nadvorne
- (17) Nikitovka
- (18) Nikolaev
- (19) Novobogatinsk
- (20) Okha
- (21) Riga

S-E-C-R-E-T

S-E-C-R-E-T

- (22) Sambor
- (23) Stry
- (24) Tiflis (Bolskoi Lilo)
- (25) Ustrzyki Dolne

d. Sometimes Inferred in Reports to Be Sites of Major Facilities.

- (1) Konstantinovski (probably Yaroslavl)
- (2) Vannovskaya

e. Sometimes Inferred in Reports to Be Sites of Minor Facilities.

- (1) Alexandrovsk
- (2) Alma Ata
- (3) Astrakhan
- (4) Irkutsk
- (5) Krasnoyarsk
- (6) Maikop
- (7) Tbilisi
- (8) Usol'ye
- (9) Vladivostok

f. Sometimes Inferred in Reports to Be Sites of Some Facilities.

- (1) Aktyubinsk
- (2) Bolekhov
- (3) Chita
- (4) Derezhytse
- (5) Ilubioze
- (6) Nizyl-Kiya
- (7) Lyubertsy
- (8) Matsesta
- (9) Petropavlovsk
- (10) Rykhohitse
- (11) Surekhany
- (12) Tashkent
- (13) Ulan-Ude
- (14) Utilik

S-E-C-R-E-T

g. Mentioned in Reports as Sites of Possible Facilities.

- (1) Abakan
- (2) Aksu
- (3) Alexandrovka
- (4) Arnavir
- (5) Ashkebad
- (6) Barnavl
- (7) Bavly
- (8) Bina
- (9) Biysk
- (10) Blagoveschensk
- (11) Chadayevka
- (12) Chardzhou
- (13) Chernikovsk
- (14) Chingvirutashi
- (15) Chipogayevo
- (16) Chop
- (17) Dolinsk
- (18) Dshar-Murgon
- (19) Dubove
- (20) Dushman
- (21) Gori
- (22) Igumnov-Tzhrzhinsk
- (23) Isfara
- (24) Iskininski
- (25) Ivanovka
- (26) Jemugi
- (27) Kegan
- (28) Kala
- (29) Kara Tag
- (30) Kezil
- (31) Kirovabad
- (32) Kishinev
- (33) Kizlyar

S E C R E T

- (34) Khatanga
- (35) Khau-Dag
- (36) Kokand
- (37) Kraskino
- (38) Krasnoarmeysk
- (39) Krekin
- (40) Kuibyshevka-Vostochnaya
- (41) Kulsary
- (42) Yurgan
- (43) Kyevo
- (44) Lepeya
- (45) Lyublino
- (46) Nakchik
- (47) Nakhodka
- (48) Neftechala
- (49) Neftegorsk
- (50) Nevinnomysk
- (51) Novokazalinsk
- (52) Novorossisk
- (53) Nytva
- (54) Nytvensk
- (55) Omsk
- (56) Paraflou
- (57) Prokop'yevsk
- (58) Pulavtomusko
- (59) Pyatigorsk
- (60) Ryazan
- (61) Saloghy
- (62) Sanarkand
- (63) Sante
- (64) Saratov Uvekh
- (65) Shaksa
- (66) Shaumyan
- (67) Skaksa
- (68) Solny

S-E-C-R-E-T

- (69) Sovetskaya-Feven
- (70) Sumgait
- (71) Sverdlovsk
- (72) Termez
- (73) Tschuana
- (74) Turkestan
- (75) Ugloveaya
- (76) Urussu
- (77) Uryupinsk
- (78) Uschyki
- (79) Ust-Vym
- (80) Varinsk
- (81) Verkhne Chusovsk
- (82) Veronezh
- (83) Vesegonsh
- (84) Volodga
- (85) Vyshka

S-E-C-R-E-T

~~S-E-C-R-E-T~~5. Annotated List of Selected References.

NOTE: Items a to i in this reference list have titles identical with nine selected titles listed in the Annex to I-B, Production and Exploration of Petroleum in the USSR. The correlations between these items in the two reference lists follow:

<u>Title of Item</u>	<u>Item designation in this paper.</u>	<u>Item designation in production paper.</u>
General Data on Soviet Petroleum Industry and Production	a	a
Special Monographs on Soviet Petroleum Industry Topics	b	e
Miscellaneous data on Soviet Regional Oil Industry	c	f
Fragmentary Intelligence on Soviet Oil Fields: Selected Typical Reports	d	h
Miscellaneous Notes on Soviet Petroleum Industry	e	i
<span style="border: 1px solid black; padding: 2px;"> </span>	f	j
Data on the Fourth Five-Year Plan for the Soviet Petroleum Industry	g	k
Data on Soviet Petroleum Industry Technology	h	l
Typical Intelligence on Soviet Petroleum Industry Equipment Procurement and Manufacture	i	o

Individual references listed herein in items a to i are correlated with the same references as listed in the Annex to I-B, Production and Exploration in the USSR, by showing the latter references underlined. For additional discussion and evaluation, these underlined references should be consulted in the paper referred to above.

e. General Data on Soviet Petroleum Industry and Production.

- (1) ORE 4/1. Petroleum Resources within the USSR. 16 June 1947. Secret.

18 pp. a(3).

- (2) Army, EUCOM ID HQ RP-61-48: CIA 207686. 17 May 1948. Secret.  
Petroleum in the USSR. Translation. 17 pp. a(10).

~~S-E-C-R-E-T~~

~~S-E-C-R-E-T~~

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(3) [redacted] . USSR Petroleum Extraction and

Refining. Abstract translations. 9 pp. a(11).

(4) D. D. MOORE, R. T. LUND, The Soviet Petroleum Industry. Project Rand

RM-418, 31 January 1950. Secret. 48 pp. a(16).

(5) D. M. Shimkin, Is Petroleum Weakness? Oil and Gas Journal Vol. 49,

No. 33 (21 December 1950). a(20).

25X1

[redacted]

(7) Soviet Anniversary Speech of Beriya. Translation in USSR Home Service,

6 November 1951, pp. AA 1 - AA 7. Confidential. a(22).

(8) World Oil Atlases. a(23).

(a) 1946 World Oil Atlas. The Oil Weekly, Section 2, 20 May 1946.

(b) 1947 World Oil Atlas. The Oil Weekly, Section 2, 30 June 1947.

(c) 1948 World Oil Atlas. World Oil, Section 2, July 1948.

b. Special Monographs on Soviet Petroleum Industry Topics.

25X1 (1) [redacted] series by one intelligence source, c(1). Each Secret/

US Officials Only, 20-45 pp. Issued 1949-1951. Reports that give prewar data reasonably compatible with other responsible intelligence. Postwar data also included, but believed to be irresponsible and of little real value. Reports in this series generally provide data on oil qualities and processing trends. The following numbers are considered to be especially significant for specific data on refining installations.

S-E-C-R-E-T

25X1

- |     |   |
|-----|---|
| (a) | <u>Survey of the Soviet Oil Industry.</u>               |
| (b) | <u>The Oilfields of Ukraine (Ukrneft).</u>              |
| (c) | <u>The Ukhta Oil Region. Pechora Region.</u>            |
| (d) | <u>The Maikop-Kuban Black Sea Oil Region.</u>           |
| (e) | <u>The Cracking Process in the USSR.</u>                |
| (f) | <u>The Turkmenian Oil Region (Turkmenneft).</u>         |
| (g) | <u>The Daghestan Oil Region (Dagneft).</u>              |
| (h) | <u>The Oil Fields of the Sakhalin Island (Dalneft).</u> |
- 25X1

c. Miscellaneous Data on Soviet Regional Oil Industry.(1) CIA 242312. Foreign Documents Branch Translation 180. Petroleum

Industry in the Caucasus. 27 September 1948. Confidential. Extract translation  
of Kaukasus (Caucasus). 66 pp. f(3).

(2) Army, EUCOM 7707 ECIC RT-1196-49 (A-917). 19 September 1949. Secret.

Includes data on processing in Emba oil region. 3 pp. f(11).

(3) Oil Industry in Carpatho-Ukraine Oil Region. Department of State,

Scientific Intelligence Report No. 5/1. f(13). 8 March 1950. Confidential. 8 pp. 25X1

(4) Army, EUCOM ID HQ RT-39-50 (STI 3776); CIA 452107. 20 April 1950.

Confidential. Oil Industry in the Carpatho-Ukraine Oil Region. 11 pp. f(14).

S-E-C-R-E-T

d. Fragmentary Intelligence on Soviet Oilfields. Selected Typical Reports.

(1) Army reports; mostly data from refugees, DP's, PW's.

(a) USFA, ID HQ R-416-49; CIA 350627. 12 August 1949. Confidential.

Data on refineries in Grozny oil region. 5 pp. h(1) (k).

(b) USFA, ID HQ R-504-50; CIA 489669. 14 July 1950. Confidential.

Data on refining installations near Krasnokamak. 9 pp. h(1) (s).

(c) USFA, ID HQ R-1217-50; CIA 569950. 29 December 1950. Confidential.

Data on refinery near Tbilisi (presumably at Tiflis, or Bolshoi Lito). h (1) (b\*).

(2) Other reports.

(a) [redacted] CIA 150860. 29 January 1948. Secret/US Officials Only.

Data on refineries in Baku oil region. 2 pp. h (2) (a).

(b) [redacted] 23 August 1950. Secret/US Officials Only. Refers to

Oktyabrsk area, Ural Region. 2 pp. h (2) (h).

(c) [redacted] 14 May 1951. Confidential/US Officials Only. Data

on refinery at Sambor. 2 pp. h(2) (m).

e. Miscellaneous Notes on Soviet Petroleum Industry.

(1) [redacted] CIA 194190. USSR: War and Postwar Development of the Oil

Industry. 7 May 1948. Restricted. 2 pp. i (1).

f. [redacted]

(1) [redacted] USSR: Petroleum Industry. 28 January 1949. Secret.

4 pp. j (2).

(2) [redacted] USSR: Chemical Research and Synthetic Fuel Adminis-

tration. 30 March 1949. Confidential/US Officials Only. 2 pp. j(5).

S-E-C-R-E-T

S-E-C-R-E-T

25X1

(3) [redacted] USSR: Petroleum Chemistry. 31 March 1949. Confidential/US Officials Only. 2 pp. j(6).

25X1

(4) [redacted] USSR: Revised Estimate of Soviet Petroleum Production.  
26 August 1949. Secret/US Officials Only. 15 pp. j(8).

g. Data on the Fourth Five-Year Plan for the Soviet Petroleum Industry.

25X1

(1) [redacted] USSR: Petroleum Industry Production. 15 December 1951.  
Restricted. 7 pp. k(18).

h. Data on Soviet Petroleum Industry Technology.

25X1

(1) [redacted] USSR: Current Research on Petroleum and Related Fields.  
20 May 1949. Confidential/US Officials Only. 11 pp. l(4).

25X1

(2) [redacted] USSR: Survey of the Petroleum Industry. 15 July 1949.  
Confidential/US Officials Only. 19 pp. l(5).

i. Typical Intelligence on Soviet Petroleum Industry Equipment Procurement

and Manufacture. Listed items o(1) through o(16) typically with miscellaneous  
application to various types of Soviet petroleum industry equipment.

j. Data on Soviet Lend-Lease Refineries with Houdry Catalytic Systems.

(1) Badger Design Data for USSR Lend-Lease Refineries with Houdry Catalytic  
Systems. Process and Operating Data Book, 41 Volumes, National Archives Files.  
Secret.

(2) Office of Naval Intelligence, CIA 5753, 9 May 1946. Secret. Information  
on gasoline production in Soviet Russia. Data obtained from [redacted]

25X1

25X1

[redacted] Notes mostly relating to the lend-lease  
Houdry plants. 3 pp.

25X1

[redacted] February 1947. Secret. Information as of May 1946 on Boudry

Lend-Lease plants in the USSR. Obvious errors present in the information. 1 pg.

25X1

[redacted] CIA 119601. 17 October 1947. Secret. USSR: Lend-Lease

Catalogued Packing Equipment for Oil Refineries. 1 pg.

25X1

[redacted] CIA 129546. 20 November 1947. Secret. Data on the Soviet 25X1



25X1



system plants. 3 pp.

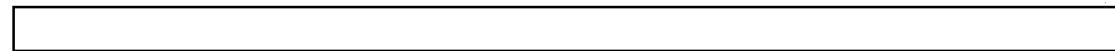
25X1A2G (3)

Data on Soviet



Lend-Lease Boudry projects. Sources

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25X1A2G (3) [redacted] Report giving the

following data on the Soviet lend-lease Boudry projects and other foreign refinery

installations in the USSR. Certain information is given on the Orsk Boudry plant,

and statement is made that 38% of the material was shipped by 1946 for the

~~S-E-C-R-E-T~~

Kuibyshev and Krasnovodsk Houdry plants. The latter material is described as 25,000 - 30,000 tons of "replacement machinery" (?), but later information has inferred this material to be structural steel for the Kuibyshev plant only. Statements are made that Arthur G. McKee Co. constructed "several pressure cracking units" in the USSR in the 1930's; that Max B. Miller shipped "several solvent units" to the USSR; and that the Nazis reportedly bombed a refinery at Orenburg (the latter is believed to be a former name for CHEHALOV). [REDACTED] 25X1

25X1 [REDACTED]

25X1

(10) [REDACTED] CIA 156811. USSR: Development of Technicians and Technique

in Petroleum Industry. 16 February 1948. Secret/US Officials Only. Appraisals

[REDACTED] 25X1

25X1 [REDACTED]

Single page report.

25X1

(11) [REDACTED] CIA 158699. 19 February 1948. Secret. Data on Foster 25X1

Wheeler equipment furnished for the Soviet lend-lease Houdry projects. [REDACTED]

25X1 [REDACTED]

25X1 [REDACTED]

Secret. 2 pp. with 3 pp. of tabulations. Data pertaining to Houdry lend-lease plant productions in the USSR.

(13) Naval Intelligence 30-S-473 CIA 79637. 18 April 1947. Secret. Data on

the Soviet lend-lease Houdry project at Orsk. 2 pp.

25X1A2G

(14) [REDACTED] Data on the Soviet

lend-lease Houdry projects at Orsk and Gurev. [REDACTED] 3 pp.

(15) [REDACTED] Enclosure: Photographs

S E C R E T

of the Soviet land-lease Houdry plant at Orsk.

(16) CIA 295694, 7 April 1948. Confidential. Army VIII - 1044. Data on the Soviet refining installations at Orsk. 2 pp.

(17) CIA 299430, 1948. Confidential. Data on the Soviet refining installations at Orsk.

(18) CIA 306008, December 1948. Confidential. Army VIII - 1018. Data on the Soviet refining installations at Orsk. 2 pp.

(19) Army VIII - 1080, 27 March 1949. Confidential. Data on the Soviet refining installations at Orsk. 1 pg.

(20) ECIC 7707 Report, 1 May 1949. Secret. Data on the Soviet refining installations at Orsk. 1 pg.

25X1 (21) [redacted] 25 October 1948. Secret. 5 single-page reports on the Soviet refining installations at Orsk.

(22) Naval Intelligence 26-S-47; CIA 77263, 18 April 1947. Secret. Data on the Soviet land-lease Houdry project at Gurev. 2 pp.

25X1 (23) [redacted] CIA 175763, 31 March 1948. Secret. Data on the Soviet land-lease Houdry project at Gurev. Source: [redacted]

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standard and recommended procedures; Soviet techniques indicated be not the best methods in some cases. 8 pp.

25X1

(25) [redacted] CIA 232755. USSR: Oil Installations at Guryev, Krasnovodsk,

and Kuibyshev. 19 August 1948. Secret/US Officials Only. Earlier general data 25X1

[redacted]

page report.

25X1

(26) [redacted] Information late 1944. Secret. 2 pp. of data

on the Soviet refinery installations at Kuibyshev; location maps.

(27) Naval Intelligence 31-S-47; CIA 77587. 18 April 1947. Secret. Data

on the Soviet lend-lease Houdry project at Kuibyshev. 2 pp.

(28) ECIC 7707 Report RT-558-49; CIA 319681. November 1948. Confidential.

3 ICF reports on Soviet refinery installations at Kuibyshev. 3 pp.

(29) Army VI-1024; CIA 320963. November 1948. Confidential. Data on the

Soviet refinery installations at Kuibyshev. 1 pg.

(30) CIA 42670; State Despatch, Moscow 652. 31 December 1946. Confidential.

Data relating to Soviet land-lease Houdry project at Krasnovodsk, furnished by 25X1

[redacted]

25X1

(31) [redacted] USSR. Sulfuric Acid Alkylation Plant. 14 March 1951.

25X1

Single page report.

- 30 -

25X1

(32) [redacted] USSR: Alkylation Plant. 31 March 1951. Secret/US

Officials Only. Continuation of the report of Reference (31) above. Single page report.

25X1

(33) [redacted] USSR: Location of Sulfuric Acid Alkylation Plant at Guryev.

25X1

25X1 11 April 1951. Confidential/US Officials Only.

[redacted]

units at Guryev and Orsk. Single page report.

25X1

(34) [redacted] Memorandum on Lend-Lease Alkylation Units at Noudry.

System Plants in USSR. 27 April 1951. [redacted] Confidential. Single page memo. 25X1

25X1

[redacted]

k. Other Data on Foreign Refinery Constructions in the USSR.

(1) Memorandum on Russian Oil Refining Industry. Foreign Refining Division.

Petroleum Administration for War. January 1946. Confidential. 2 pp. of memo.

5 sheets of tables, map of USSR refineries. Gives data on Soviet lend-lease Noudry projects, with general details of the lend-lease protocols. Includes a table of foreign refinery constructions in the USSR. Also includes a table of USSR refineries by sites, with crude oil capacity and types of facilities shown.

25X1

(2) [redacted] CIA 156294. 13 February 1948. Secret. 1 pg of data furnished

by Badger company official, listing the following refining units furnished by

4,500 B/D vacuum unit, ordered August, 1929; two 10,000 B/D topping units, Badger to the USSR, 1929-1931. For Bakur 10,000 B/D topping unit, ordered

September 1929; 2 tube-still heaters, same as for the first 10,000 B/D topping

unit mentioned above, ordered 1931. For Grozny; 25,000 B/D topping unit, partly 25X1

ordered 1930, completely ordered April 1931. [redacted]

**Next 1 Page(s) In Document Exempt**

S-E-C R-ETT

3. Miscellaneous Reports on Specified Soviet Refining Facilities. Includes fragmentary reports selected as typical. The latter consist in large part of military intelligence notes, in turn mostly based upon data obtained from refugees, PW's.

(1) CIA 419684. ID Report. 22 September 1949. Confidential. Data on facilities at Leningrad. 6 pp.

(2) ECIC/53/120826 (2296). 1948-1949. Confidential. Data on facilities at Leningrad.

(3) Wringer T-004876-6-472. 12 October 1949. Secret. Data on facilities at Borislav. 3 pp.

(4) Army, USFA, ID HQ (MIS) III - 3489; CIA 557385. 11 January 1950. Confidential. Data on Nikitovka facilities in Ukraine. 6 pp. with location sketch.

(5) ONI 2-S-47. 24 March 1947. Secret. Data on facilities at Odessa. 1 pg.

(6) Naval Intelligence 4-S-47; CIA 77246. 5 April 1947. Secret. Data on Odessa facilities reportedly erected 1936-1937. 1 pg.

(7) Naval Intelligence 218-47; CIA 135011. 30 October 1947. Confidential. Data on facilities at Odessa. 1 pg.

(7) (a) Naval Section, USFA, 241-50; CIA 675952. 12 December 1950. Confidential. Data on the "Krekita" (oil refinery?) facilities at Odessa. 3 pp. with 2 sheets of location maps.

(8) Air Intelligence IV - 1016; CIA 316872. March 1949. Confidential. Data reported on facilities at Kuteesta in Kuban-Majkop oil region. 6 pp.

(9) ECIC/46/41 (1263). 1948-1949. Confidential. Data on facilities at Krasnodar.

S-E-C-R-E-T

(10) ECIC/53/84082 (2295). 1948-1949. Confidential. Data on facilities at

Krasnodar.

(11) ICF 8211. August 1949. Confidential. Data on facilities at Krasnodar.

6 pp.

25X1 (12) [redacted] 5 December 1949. Confidential / US Officials Only. Data on

Krasnodar facilities. 1 pg.

25X1 (13) [redacted] 9 December 1949. Secret / US Officials Only. Data on Krasnodar

facilities. 4 pp.

(14) Air Intelligence IV-1067; CIA 503097. April 1950. Confidential.

Data on facilities at Krasnodar. 25 pp.

(15) Air Intelligence IV-1065; CIA 539620. June 1950. Confidential. Data

on facilities at Krasnodar. 10 pp.

(16) Army, USFA, ID HQ (MIS) IV-1072; CIA 566490. July 1950. Confidential.

Data on facilities at Krasnodar. 6 pp. with location sketch.

(17) Army, USFA, ID HQ (MIS) IV-1073. July 1950. Confidential. Data on

facilities at Krasnodar. 2 pp.

(18) Army, USFA, ID HQ R-1227-50; CIA 568342. 29 December 1950. Confidential.

Data on facilities at Krasnodar. 1 pg. with 2 sheets of location sketches.

(19) Air Intelligence IV-1021; CIA 320966. 1949. Confidential. Data on

Tuapse facilities. 3 pp.

(20) ECIC ID ICF 10403. Information April 1949. Confidential. Data on facilities

at Tuapse.

(21) Air Intelligence IV-1053; CIA 420578. August 1949. Confidential. Data

on facilities at Tuapse. 7 pp.

S-E-C-R-E-T

S-E-C-R-E-T

(22) Army RT-1185-49; CIA 459555. 15 September 1949. Confidential. Data on facilities at Tuapse. 5 pp.

(23) Winger 5-2590-1149. 15 November 1949. Secret. Data on facilities at Tuapse. 8 pp.

25X1

(24) [redacted] 21 February 1951.

Secret. Comprehensive data on facilities at Tuapse. 2 pp.

(25) Army, EUCOM 7707 ECIC RT 1085-50 (ICF 10423-28); CIA 543791. 10 October 1950. Confidential. 13 pp. of data constituted by 3 cards and 2 annexes on Tuapse facilities, and 3 cards and 1 annex on Grozny facilities.

(26) Army, EUCOM 7707 ECIC RT-1099-50 (ICF 10397-10403); CIA 547564. 13 October 1950. Confidential. ICF 10403; 4-sheet card on Tuapse facilities. ICF 10397; 3-sheet card on Grozny facilities.

(27) Army RT-56-49; CIA 283788. 24 January 1949. Confidential. Data on Grozny facilities. 5 pp.

(28) Air Intelligence IV-1018; CIA 321801. March 1949. Confidential. Data on Grozny facilities. 3 pp.

(29) ECIC ID ICF 10397. Information March 1949. Confidential. Data on Grozny facilities.

(30) Air Intelligence IV-1062; CIA 517386. July 1950. Confidential. Data on Grozny facilities. 11 pp.

(31) Army, USFA, ID HQ (MIS) IV-1068; CIA 562539. 25 August 1950. Confidential. Data on Grozny facilities. 8-sheet card with 2 sheets of location sketches.

(32) Army, USFA, ID HQ (MIS) IV-1096; CIA B 461. October-November 1950. Confidential. Data on Grozny facilities. 4-sheet card.

(33) CIA 379641, Air Intelligence Report, December 1948. Confidential.

Data on facilities near Tbilisi (presumably at Tiflis, or Bolshoi Lilo). 1 pg.

(34) ID 572236, 17 June 1949. Confidential. Notes on small capacity facilities

at Bolshoi Lilo. 1 pg.

(35) Army, USFA ID HQ (MIS) V-1228; CIA 568341, 4 August 1950. Confidential.

Data on facilities at Bolshoi Lilo near Tbilisi in South Georgian oil region.

8-sheet card with location sketch.

(36) Army R-54-47; CIA 80729, 28 April 1947. Secret. Data on facilities

in Baku oil region; reports no facilities at Kala or Kirovabad in the area. 1 pg.

(37) Wringer 2-987-1149, 14 November 1949. Secret. Data on facilities at

Sungait in Baku oil region. 2 pp.

(38) Army, USFA, ID HQ X-1102; CIA 431553, December 1949, Confidential.

Report of aviation gasoline facilities at Aktyubinskaya in the Enba oil region of the

Kazak SSR. Single-sheet card.

(39) CIA 370093; Air Intelligence ID 2376, 1949. Secret. Report of

facilities in Fergana basin area, producing avgas. 1 pg.

(40) CIA 370110; Air Intelligence ID 2330-2332, 29 November 1949. Secret.

Reports on facilities in Fergana basin area, producing avgas. 2 pp.

(41) Army VI-1025; CIA 335414, 1948. Confidential. Data on Saratov facilities

3 pp. with location sketch.

(42) Army VI-1027; CIA 335415, 1948. Confidential. Data on Saratov facilities

3 pp. with location sketch.

(43) Army, EUCOM 7707 ECIC RT-1090-49; CIA 351380, 1949. Secret. Data on

Saratov facilities. 6 pp. with location sketch.

S-E-C-R-E-T

(44) CIA 469245. Installation Photo Interpretation Report. 8 June 1950.

Secret. Pertains to Saratov facilities. 3 pp.

(45) F-TS-7095-RE, NAD 66281. STROM and TSYGANOK, Ishimbaevo Oil Refinery.

Article published in Groznenskii Neftyanik (Grozny Oil Men) No. 4 (1937).

Translation into English from Russian via Wright Patterson Air Force Base, 8 September 1950. Unclassified. Comprehensive and quite adequate technical article on this installation, as of the relatively early date. 15 pp.

(46) ECIC 7827/21, MIS/83 (4203-4204). December 1948. Confidential. Data on facilities at Ishimbaevo. 1 pg. with location sketch.

25X1 (47) [redacted] 4 August 1947. Secret. Data on facilities at Ufa (Refinery No. 417). 2 pp.

(48) Army VIII-1189; CIA 419334. 1950. Confidential. Data on facilities at Chernikovsk near Ufa. 2 pp.

(49) Army VIII-1206; CIA 420373. 1950. Confidential. Data on facilities at Chernikovsk near Ufa. 3 pp.

(50) Army VIII-1083; CIA 316871. 1949. Confidential. Data on exploitation and processing in the Molotov area of the Kama oil region. 4 pp. with location map showing oilfield, refining facilities, and oil depot.

25X1 (51) [redacted] from Nafta (Cracow), June 1951, p. 177; USSR: New Oil Refinery. Total Soviet petroleum production asserted to be then currently 40 million metric tons per year. Claims a new refinery ("the largest of its kind in the world") to be under construction in the Second Baku, with the completed refinery to have a "daily output estimated at 10,000 tons" (presumably equivalent to

an annual product output of about 3.5 million metric tons). Gives "total capacity" of Soviet refineries as "90,000 tons per day" at end of 1948, with a similar value of "35,000 tons per day" in "cracking plants" at the same time. 29 September 1951. Secret.

(52) Army R-144-47; CIA 73263, 16 April 1947. Secret. Data on facilities at Syktyvkar, near Ukihta in Pechora oil region, Komi ASSR. 1 pg.

(53) Army, FEC, ID HQ 11030; CIA 576411, 4 July 1949. Secret. Facilities reported at Abakan in Khakass Autonomous Oblast, in the RSFSR in southwestern Siberia. 2-sheet card.

(54) Army, FEC, ID HQ 10058, 16 February 1950. Secret. Facilities reported at Prokop'yevsk (?) in Kemervo Oblast, in the RSFSR in central southern Siberia west of Lake Baikal. Single sheet card.

(55) Army IX-1186; CIA 517447, 1950. Confidential. Facilities reported at Omsk on the Irtysh River, in central southern Siberia west of Lake Baikal. 1 pg. 25X1



25X1

(57) [redacted] 2 June 1949. Confidential/ US Officials Only. Data on Khabarovsk facilities, indicating crude shale oil to be the charge to refining. 1 pg.

(58) Air Intelligence IR-341-49; CIA 363923, 3 October 1949. Secret. Data on Khabarovsk facilities. Information late 1948. 4 pp. with location sketch.

(59) Army, FEC, ID HQ 10406; CIA 557416, 8 February 1950. Secret. Data on Khabarovsk facilities. 3-sheet card.

(60) Army, FEC, ID HQ 10874; CIA 569964, 28 February 1950. Secret. Data

on Khabarovsk facilities. Single-sheet card.

(62) Army, FEC, ID #Q 10614; CIA 559852, 27 July 1949. Secret. Report of facilities at Izvestkovaya in the Jewish Autonomous Oblast of the RSFSR. Single sheet card.

(63) Army, FEC, ID #Q 9558; CIA 539501, 23 January 1950. Secret. Report of facilities at Nakhodka, located to the east of Vladivostok. 3 pp. with location map.

(64) Army, FEC, ID #Q 10512; CIA 560323, 2 February 1950. Secret. Data on facilities at Okha. 2-sheet card.

(65) CIA 641667; Air Technical Intelligence Center Translation F-TS-7362-RE,  
NAD 81543. T.I. 342, M. I. F. Russian Oil Refineries and Installations. Confidential.  
50 pp. of reports, typically single page and in large part based upon information

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[redacted] Contains fragmentary data on Soviet refining facilities located as follows. (a) In the Moscow area: Moscow; Lubertay (cracking plant reported); (b) At Saratov (cracking units reported). (c) In the Second Baku area: Ishimbaevo; Ufa; Sterlitamak; Molotov; Cheliabinsk; Chernikovka. (d) At Baku (reportedly handling crude oil from the Ishimbaevo area, with note made of high sulfur content in the oil). (e) In the Turkmen oil region area: Nebit-Dag; Krasnovodsk; Vyskha. (f) In the Fergana basin area: Kim; Dshar Kurgan; Chaudak; Kanibadan (cracking units reported); Ivannovskaya (Uzbek SSR); Vannovski. (g) At Grozny. (h) At Orsk. (i) At Ishipogayev (Lake Baikal area). (j) At Komsomolsk. (k) At about 40 sites in a list, giving site capacities as of 1942 (42.3 million Te/Yr for the total refining capacity of the USSR in 1942).

(66) CIA 719524; Air Technical Intelligence Center Translation F-TS-7493-RE.

TI 372, M. I. F. Released 6 February 1952. Unclassified. Contains translations  
- 40 -

~~S-E-C-R-E-T~~

of three Russian technical articles published in trade periodicals, 1935 and 1940.

Texts appear to be mostly propaganda intended for bolster of morale, in the typical Soviet pattern; numerous and miscellaneous technological notes are included, presumably authentic but actually providing little information of intelligence value. These notes are mostly glowing accounts of technological advances then accomplished in the Soviet petroleum refining industry, whereas the advances were in fact but adaptations of what was already standardized and well-developed in the US.

(a) Two papers published in Azerbaidzhanskoe Neftyanoe Khozyaistvo, 1935,

No. 12 (December). (1) R. S. PROZUMENTIK, Stalin Petroleum Refinery in Baku, 13 pp. of translation. Refers to a certain composite of refining facilities then said to furnish 80% of the refined petroleum products in the USSR. Covers modernization of equipment, process techniques, automatic controls, instrumentation, etc.

Makes note of the introduction of high alloy or stainless steels into the equipment.

Refers to new constructions with Alco, Badger, and Graver (Jenkins) pipestills.

Discusses the installation and operation of a "new" design of an atmospheric pipestill (probably a still of US origin); of an Alco high-vacuum pipestill; of an oil treating plant; of a sulfuric acid recovery unit (probably an installation of the Chemical Construction Company of Charleston, South Carolina); and of a solvent extraction plant preparing lubricating oil and using furfural as solvent (hence not an installation by Max B. Miller). Mentions the construction in 1936 of two large tubestills, each

with a daily processing capacity of 3,000 tons. Gives the following types of equipment as characteristic of Soviet refining installations in the past: batteries of shell stills, 1910; pipestill units, 1920; cracking units, 1925; combination cracking units, 1930; gas polymerization and solvent extraction units, 1935.

- 41 -

S-E-C-R-E-T

(2<sup>1</sup>) A. B. ISKENDEROV, Pyatakov Petroleum Refinery in Baku. 10 pp. of translation.

Miscellaneous notes covering elementary technology as follows: modernization of equipment to include rectifying or fractionating columns; use of tubestills to replace the inefficient shell stills "inherited" from the "capitalistic" regime; use of efficient methods of cost and yield accounting. Discusses separate new installations of various types. Includes notes on operation.

(b) Paper published in Vostochnaya Neft, 1940. K. N. PLETNEV, Operating

Experience with Two-Furnace Cracking Plants. 7 pp. of translation. Refers to petroleum cracking units at Moscow, Osipenko, Kherson, and Odessa. Includes miscellaneous notes on the installation and operation of these units, all of which appear to be modifications of the Winkler-Koch design.

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m. Special Data on Refining Technology and Related Petroleum Chemistry.

(1) Technical Norms for Petroleum Products. Official Soviet document in Russian. For English translation of table of contents of this standard manual.

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cf. [redacted] CIA 185274, 16 April 1948, Restricted, 8 pp.

(2) CIA 345128, [redacted]

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Fuels and Lubricants Capabilities. Technical Report S-42310-119, Aircraft Analysis

Section, Wright-Patterson Air Force Base. July 1949. Secret. Contains list of 43 references. 49 pp.

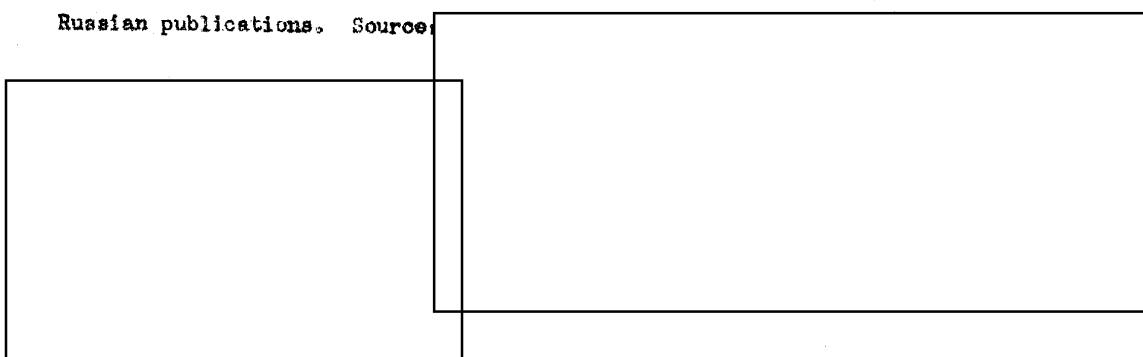
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(3) [redacted] 8 July 1949. Confidential/US Officials Only. Comparison of

Soviet and US petroleum technology and scientists. Notes based upon evidence in 25X1

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Russian publications. Source:



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(4) [redacted] 18 December 1950. Confidential. G. S. KUZYATIN, Calorific

Value of Fuels Used in Enterprises of the USSR Petroleum Industry, published in Energeticheskiy Byulleten No. 5 (1950). English translation from Russian, 9 pp.

(5) A. A. VVEDENSKIY, Thermodynamic Calculations of Fuel Industry Processes.

Technical book in Russian. For review of the book and English translation of the

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table of contents, cf. [redacted] 7 September 1950, Confidential, 8 pp.

(6) CIA 532375. Foreign Documents Division Summary 38. Aromatic Hydrocarbons

Derived from Petroleum. 1 December 1950. Confidential. Translation of technical papers on research and development work. An example of Soviet efforts to apply commercial Western techniques to USSR oil stocks, with little originality evident in the work. 96 pp.

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(7) [redacted] 22 May 1950. Secret/US Officials Only. Notes indicating no evidence of Soviet applications of Platforming, a reforming technique using platinum

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as catalyst.

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(8) [redacted] 22 January 1951. Confidential. G. M. PACHENKOV, I. P. VLASOV:

Polymerization of Oils by a High-Frequency Discharge without Electrodes. English translation of technical article published in Russian. 6 pp.

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(9) [redacted] 20 February 1951. Confidential. A. S. ZABRODINA, et al.

S. S. NAMEIKIN'S Work in the Field of Petroleum Chemistry. Published in Uspelki Khimii, Vol. XIX, No. 6 (1950). English translation from Russian. 3 pp.  
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[redacted]  
 Gives descriptions and specifications of Soviet petroleum products; contains keys to names, abbreviations, and symbols; correlated from intelligence data and official Russian publications and statements. 106 pp.

(11) FDD Periodical Abstracts, Scientific, 186. 12 January 1952. Secret.English abstracts from Dok Ak Nauk SSSR Vol. LXXXVIII, No. 3. 186T3: A.N. BASHKIROV,YA. B. CHERTKOV, The Question of Oxidation of Paraffinic Hydrocarbons, pp. 473-476.186T13: K. V. TOPCHIEVA, SH. BATTALOVA, G. M. PACHENKOV, Moscow State U, Conversion of Hydrocarbons on Aluminum Silicate Catalysts of Varying Composition, pp. 501-504.186T14: A. P. BALLOD, I. V. PATSEVICH, A. S. FELDMAN, A. V. FROST, Moscow State U, Catalytic Activity and Selective Effect of Aluminum Silicate Catalysts, pp. 509-512.n. Data on Quality of Soviet Crude Oils.(1) USBM Bulletin 401. Properties of Typical Crude Oils from Fields of the Eastern Hemisphere. 1937. 169 pp. (20 pp. for Soviet crudes.)

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(2)  CIA 123687, 31 October 1947. Secret. Data on Soviet request

for a refinery design by a major US firm, to produce avgas from a crude charge of which a sample was furnished to the firm. Requested design was not made. Source:

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2 pp. with table showing laboratory analysis of the crude oil sample.

(3) General Analysis of USSR Baku Oils. "Treasure Island" abstracts of official Soviet publications. Abstracts of Mi Nefti SSR (USSR Oils), by Prof. A.S. VELIKOVSKY and S. N. PAVLOVA, published 1945. Serial Numbers 88536 (abstract 11 April 1951), 88949 (abstract 22 March 1951), and 88953 abstract 22 March 1951). Each single page.

(4) CIA 643970. Foreign Documents Division Translation 311. Classification of USSR Petroleum According to Gost 912-46. 13 August 1951. Confidential. Conventions, chemical, physical, and fractionation analyses, variously qualitative and quantitative, are here recorded for more than 150 representative petroleum samples, with the samples taken from various USSR productive regions. 80 pp. of tables and text.

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